

REMARKS

Status of the Claims

The present Office Action addresses claims 1-25, however claims 7-10 and 20-21 are withdrawn from consideration. Remaining claims 1-6, 11-19, and 22-25 stand rejected.

Rejections Pursuant to 35 U.S.C. § 103

Claims 1-6, 11-18, and 22-25 are rejected pursuant to 35 U.S.C. § 103(a) as being obvious over U.S. Patent No. 4,620,533 ("Mears") in view of U.S. Patent No. 6,413,257 ("Lin"). Claims 1-6, 11-19, and 22-25 are rejected pursuant to 35 U.S.C. § 103(a) as being obvious over U.S. Patent No. 6,277,119 ("Walulik") in view of Lin.

Independent claim 1 recites an implantable spinal connector including a clamp member having top and bottom portions that are connected to one another at a terminal end thereof such that the top and bottom portions are movable between an open position in which the top and bottom portions are spaced a distance apart from one another, and a closed position in which the clamp member is adapted to engage a spinal fixation element there between. The top and bottom portions include superior and inferior surfaces, respectively, that taper away from one another toward the terminal end. The clamp member further includes a bore extending through the top and bottom portions for receiving a locking mechanism for locking the top and bottom portions in the closed position, the bore in at least one of the top and bottom portions being internally threaded for mating with corresponding threads formed on at least a portion of the locking mechanism.

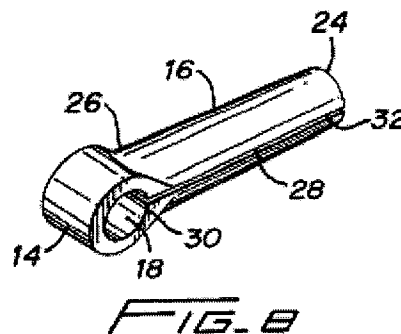
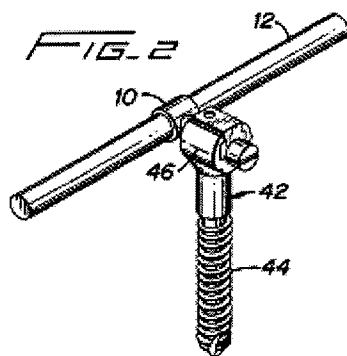
Independent claim 23 recites an implantable spinal connector including a clamp member having top and bottom portions that are connected to one another at a terminal end thereof such that the top and bottom portions are movable between an open position and a closed position. A recess is formed between a superior surface of the top portion of the clamp member and an inferior surface of the bottom portion of the clamp member, the recess being adapted to seat a spinal fixation element therein. The implantable spinal connector also includes axially aligned, concentric bores extending through the top and bottom portions at a location spaced apart from the recess, the bores being configured to receive a locking mechanism for locking the top and bottom portions in the closed position. The implantable

spinal connector further includes a substantially planar inferior surface extending along the bottom portion of the clamp member is configured to engage a spinal fixation plate and a superior surface extending along the top portion of the clamp member, the superior and inferior surfaces tapering away from one another toward the terminal end.

The Examiner separately relies on Mears and Walulik to teach the claimed invention but admits that both Mears and Walulik fail to teach that the superior and inferior surfaces of the top and bottom portions taper away from each other toward the terminal end (i.e., the ends that connected to one another). The Examiner thus relies on Lin for this feature, arguing that “it would have been obvious to one of ordinary skill in the art at the time the invention was made to construct the device of Mears [or Walulik] with superior and inferior surfaces of the top and bottom portions tapering away from each other toward the terminal end in view of Lin et al. in order to increase the clamping force.”

One having ordinary skill in the art would have no motivation to combine Lin with either Mears or Walulik. The strongest rationale for combining references is a recognition that some advantage of expected beneficial result would be produced by the combination. (See MPEP §2144). There is no advantage to modifying the clamp of Mears or the clamp of Walulik such that the top and bottom portions include superior and inferior surfaces, respectively, that taper away from one another toward the terminal end. Indeed, the expected result asserted by the Examiner, increasing the clamping force, would not be predicted and would likely not even occur.

As shown in FIGS. 2 and 8 of Lin, reproduced below, a leg portion (16) of a connector (10) is inserted into a U-shaped opening in a top portion (46) of a pedicle screw (42).



The leg portion (16) can taper from a smaller diameter to a larger diameter toward a terminal end (26). (See Lin, col. 4, lines 17-19.) The leg portion's tapering diameter can "increase the clamping force of the one piece connector 10 on the longitudinal spinal rod 12 *when pedicle screw 42 is connected to the one piece connector 10 at variable points along the longitudinal axis LA2-LA2 of the leg portion 16.*" (Lin, col. 4, lines 22-26. Emphasis added.)

Neither the clamp of Mears nor the clamp of Walulik have a leg portion that is inserted into anything. Rather, both Mears and Walulik disclose clamps that have bores for receiving screws to lock the clamps. Since neither clamp includes any type of leg that is inserted into another clamp, the teachings of Lin are not applicable. Neither Mears's clamp nor Walulik's clamp can be modified to have tapering surfaces that allow the clamping forces to be along their longitudinal axes. Accordingly, no person having ordinary skill in the art would modify Mears or Walulik in view of Lin.

Furthermore, the Examiner suggests modifying the female component (20) of Mears's clamp (shown in FIG. 8 of Mears) to have tapered surfaces as taught by Lin. The female component (20) mates with a male component (21) (see FIGS. 10 and 14) via a projection (22) in the male component that seats in a cooperating indent (23) in the female component (20). If the female component (20) had a tapered surface, it would not properly align with the male component (21) and would complicate, if not prevent, the clamp's tightening by insertion of a thumb screw (25) through the female and male components (20, 21). In particular, a tapered surface would prevent the two components from resting flush against one another, thus preventing a secure connection from being formed between the two components. Thus, the female component (20) cannot be modified as suggested by the Examiner.

Accordingly, claims 1 and 23, as well as claims 2-6, 11-19, 22, and 24-25 which depend therefrom, therefore distinguish over Mears and Lin and over Walulik and Lin and represent allowable subject matter.

Conclusion

Applicant submits that all claims are in condition for allowance, and allowance thereof is respectfully requested. The Examiner is encouraged to telephone the undersigned attorney for Applicant if such communication is deemed to expedite prosecution of this application.

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Respectfully submitted,

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